

## **IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of claims:**

1. (Currently amended) A method for rendering a polygon, the method comprising:  
receiving geometry data defining vertices of the polygon,  
computing initial vertex x,y values at end points proximate to each of the vertices  
of the polygon, wherein the end points define the outer edges of the first  
and last span that traverse the polygon;  
computing a slope along each edge of the polygon, wherein said computing a  
slope introduces an error in each computed slope value due to the limited  
number of precision bits used to represent the slope value;  
interpolating equally spaced x,y values along each respective edge of the polygon,  
wherein each of the x,y values specify the edge of sequential spans  
traversing the polygon, wherein said interpolating uses the computed slope  
along the respective edge of the polygon, and wherein the last x,y values  
in the sequence for each edge have an accumulated error due to the error  
in each respective computed slope value; and  
storing final x,y values for each respective edge of the polygon, wherein, for each  
respective edge, said storing final x,y values comprises storing the  
interpolated x,y values for non-end points of the respective edge, and said  
storing final x,y values comprises storing the computed initial vertex x,y  
values for [[each]] at least one of the end points of the respective edge,  
instead of the corresponding last interpolated x,y values.
2. (Currently amended) The method of claim 1, wherein said storing the computed  
initial vertex x,y values for [[each]] either or both of the end points of the  
respective edge comprises replacing interpolated x,y values at the end points with  
the corresponding computed initial vertex x,y values.

3. (Currently amended) The method of claim 1, wherein said storing the computed initial vertex x,y values for [[each]] at least one of the end points of the respective edge operates to prevent inclusion of an extraneous pixel and/or exclusion of a pixel within the polygon.
4. (Original) The method of claim 1, wherein the computed slope is a quantized slope value.
5. (Original) The method of claim 1, wherein the slope value is represented by a quantized value having a first number of bits of precision, wherein the first number of bits of precision produce inaccuracies for interpolated x,y values computed at the end points of at least one edge of the polygon.
6. (Cancelled)
7. (Original) The method of claim 1, wherein the polygon is a triangle.
8. (Currently amended) A method for rendering a polygon, the method comprising:  
receiving vertex data defining vertices of a polygon, wherein the vertices include  
a first vertex and a second vertex;  
computing initial vertex x,y values for end points proximate to the first vertex and  
the second vertex of the polygon, wherein the end points define the outer  
edges of the first and last span that traverse the polygon;  
calculating a slope value along a first edge of the polygon located between the  
first vertex and the second vertex, wherein said computing a slope  
introduces an error in the computed slope value due to the limited number  
of precision bits used to represent the slope value;  
interpolating an equally spaced sequence of x,y values along the first edge of the  
polygon between the first vertex and the second vertex, wherein each of  
the x,y values specify the edge of a span traversing the polygon, wherein

said interpolating uses the calculated slope value along the first edge of the polygon, and wherein the last x,y values in the sequence for the first edge have an accumulated error due to the error in the computed slope value;  
and

storing final x,y values for the first edge of the polygon, wherein said storing final x,y values comprises storing the interpolated x,y values for non-end points of the first edge, and [[said storing final x,y values comprises]] storing the corresponding computed initial vertex x,y values for [[each]] at least one of the end points of the first edge.

9. (Original) The method of claim 8, wherein said computing, said calculating, said interpolating, and said storing are performed for each of the edges of the polygon.
10. (Original) The method of claim 8, wherein said storing the computed initial vertex x,y values for each of the end points of the first edge comprises replacing interpolated x,y values at the end points with the computed initial vertex x,y values.
11. (Original) The method of claim 8, wherein said storing the computed initial vertex x,y values for each of the end points of the first edge operates to prevent inclusion of an extraneous pixel and/or exclusion of a pixel within the polygon.
12. (Original) The method of claim 8, wherein the slope value is a quantized slope value.
13. (Original) The method of claim 8, wherein the slope value is represented by a quantized value having a first number of bits of precision, wherein the first number of bits of precision produce inaccuracies for interpolated x,y values computed at the end points of the first edge of the polygon.
14. (Cancelled)

15. (Original) The method of claim 8, wherein the polygon is a triangle.
16. (Cancelled)
17. (Currently amended) A system for rendering a polygon, the system comprising:  
a vertex processor operable to receive vertex data defining vertices of a polygon,  
wherein the vertices comprise a first vertex and a second vertex, and  
wherein the vertex processor is operable to assemble the vertex data;  
a render system coupled to the vertex processor to receive the assembled vertex data; and  
a memory coupled to the render system;  
wherein the render system is operable to:  
compute initial vertex x,y values for end points proximate to the first vertex and the second vertex of the polygon, wherein the end points define the outer edges of the first and last span that traverse the polygon;  
calculate a slope value along a first edge of the polygon located between the first vertex and the second vertex, wherein said computing a slope introduces an error in the computed slope value due to the limited number of precision bits used to represent the slope value;  
interpolate an equally spaced sequence of x,y values along the first edge of the polygon between the first vertex and the second vertex, wherein each of the x,y values specify the edge of a span traversing the polygon, wherein said interpolating uses the calculated slope value along the first edge of the polygon, and wherein the last x,y values in the sequence for the first edge have an accumulated error due to the error in the computed slope value;  
and  
store final x,y values for the first edge of the polygon in the memory,  
wherein, in storing the final x,y values, the render system is

operable to store the interpolated x,y values for non-end points of the first edge and store the computed initial vertex x,y values for [[each]] at least one of the end points of the first edge.

18. (Currently amended) The system of claim 17, wherein, in storing the computed initial vertex x,y values for each of the end points of the first edge, the render system is operable to replace interpolated x,y values at the end points with the computed initial vertex x,y values.
19. (Original) The system of claim 17, wherein storage of the computed initial vertex x,y values for either or both [[each]] of the end points of the first edge operates to prevent inclusion of an extraneous pixel and/or exclusion of a pixel within the polygon.
20. (Original) The system of claim 17, wherein the slope value is represented by a quantized value having a first number of bits of precision, wherein the first number of bits of precision produce inaccuracies for interpolated x,y values computed at the end points of the first edge of the polygon.
21. (Original) The system of claim 17, wherein the polygon is a triangle.
22. (Original) The system of claim 17, wherein the render system comprises at least one edge walker for interpolating the x,y values along the first edge of the polygon.
- 23-24. (Cancelled)
25. (New) A system for rendering a polygon, the system comprising:  
means for receiving geometry data defining vertices of the polygon,

means for computing initial vertex x,y values at end points proximate to each of the vertices of the polygon, wherein the end points define the outer edges of the first and last span that traverse the polygon;

means for computing a slope along each edge of the polygon, wherein said computing a slope introduces an error in each computed slope value due to the limited number of precision bits used to represent the slope value;

means for interpolating equally spaced x,y values along each respective edge of the polygon, wherein each of the x,y values specify the edge of sequential spans traversing the polygon, wherein said interpolating uses the computed slope along the respective edge of the polygon, and wherein the last x,y values in the sequence for each edge have an accumulated error due to the error in each respective computed slope value; and

means for storing final x,y values for each respective edge of the polygon, wherein, for each respective edge, said storing final x,y values comprises storing the interpolated x,y values for non-end points of the respective edge, and storing the corresponding computed initial vertex x,y values for at least one of the end points of the respective edge.

26. (New) A method for rendering a polygon, the method comprising:
  - receiving geometry data defining vertices of the polygon,
  - computing initial vertex x,y values at end points proximate to each of the vertices of the polygon that correspond to the intersections of a first and last scan line with the edges or extensions of the edges;
  - computing a slope along each edge of the polygon, wherein said computing a slope introduces an error in the computed slope value due to the limited number of precision bits used to represent the slope value;
  - interpolating x,y values at stepping points along each respective edge of the polygon that correspond to the intersections of additional scan lines with the edge, wherein said interpolating uses the computed slope along the respective edge of the polygon, and wherein the error in stepping point

location due to the error in the computed slope accumulates for each stepping point along the edge;

storing final x,y values for each respective edge of the polygon, wherein, for each respective edge, said storing final x,y values comprises storing the interpolated x,y values for non-end stepping points of the respective edge, and said storing final x,y values comprises storing the computed initial vertex x,y values at end points proximate to each of the vertices of the polygon for each of the first and last end stepping points of the respective edge, wherein said operation of storing the computed initial vertex x,y values for each of the end points of the respective edge, instead of using interpolated x,y values at the end points, operates to prevent inclusion of an extraneous pixel that is outside the polygon and/or exclusion of a pixel that is within the polygon due to the accumulated error in the last interpolated stepping points for each edge.

27. (New) A method for rendering a polygon, the method comprising:
- receiving geometry data defining vertices of the polygon,
  - computing initial vertex x,y values at end points proximate to each of the vertices of the polygon that are related to pixel grid locations;
  - computing a slope along each edge of the polygon, wherein said computing a slope introduces an error in the computed slope value due to the limited number of precision bits used to represent the slope value;
  - interpolating x,y values at stepping points approximating pixel grid locations along each respective edge of the polygon, wherein said interpolating uses the computed slope along the respective edge of the polygon, and wherein the error in stepping point location due to the error in the computed slope accumulates for each stepping point along the edge;
  - storing final x,y values for each respective edge of the polygon, wherein, for each respective edge, said storing final x,y values comprises storing the interpolated x,y values for non-end stepping points of the respective edge, and said storing final x,y values comprises storing the computed initial

vertex x,y values at end points proximate to each of the vertices of the polygon for each of the first and last end stepping points of the respective edge, wherein said operation of storing the computed initial vertex x,y values for each of the end points of the respective edge, instead of using interpolated x,y values at the end points, operates to prevent inclusion of an extraneous pixel that is outside the polygon and/or exclusion of a pixel that is within the polygon due to the accumulated error in the last interpolated stepping points for each edge.